

What is Claimed:

1. A method for identifying an agent that  
5 increases glucose dependent insulin secretion in pancreatic  
islet  $\beta$ -cells comprising the steps of:
  - (a) obtaining a pancreatic islet  $\beta$ -cell culture;
  - (b) contacting the pancreatic islet  $\beta$ -cell  
culture with an agent of interest; and
  - 10 (c) detecting whether said agent of interest  
has an inhibitory affect on the activity of  
phosphodiesterase 1C in said pancreatic  
islet  $\beta$ -cells, the presence of an  
inhibitory effect indicating that the agent  
15 of interest may be useful for increasing  
insulin secretion.
2. The method of Claim 1 wherein said cultured  
pancreatic islet  $\beta$ -cells are cultured insulinoma cells  
20 derived from transgenic mice that express the SV40 large T  
antigen in pancreatic islet  $\beta$ -cells.
3. The method of Claim 1 wherein the inhibition  
to phosphodiesterase 1C activity is detected by measuring  
25 substrate concentrations of cGMP phosphodiesterase activity.

4. A novel phosphodiesterase 1C inhibitor identified by the method of Claim 1.

5 5. A method of treating type II diabetes comprising administering to a subject an amount of a phosphodiesterase 1C inhibitor effective to treat the type II diabetes.

10 6. The method of Claim 5 wherein said phosphodiesterase 1C inhibitor is a compound of the general formula isobutylmethylxanthine derivatives with substitutions at positions 2 and 8.

15 7. The method of Claim 6 wherein said phosphodiesterase 1C inhibitor is selected from the group consisting of eburnamenine-14-carboxylic acid ethyl ester (vinpocetine), zaprinast, 4-[3-(cyclopentyloxy)-4-methoxyphenyl]-2-pyrrolidinone (rolipram), 1,6-dihydro-2-methyl-6-oxo-(3,4'-bipyridine)-5-carbonitrile (milrinone),  
20 and/or combinations thereof.

8. The method of Claim 6 wherein said phosphodiesterase 1C inhibitor is administered in an amount effective to regulate blood sugar levels in said subject.

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9. The method of Claim 6 wherein said phosphodiesterase 1C inhibitor is administered in an amount

effective to achieve a blood level ranging from about 1 to about 1000  $\mu\text{g/Kg}$ .

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